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These papers take the view that automation impinges upon our socio-psychological as well as economic existence and we must take drastic measures to survive. Robert Theobald, presenting evidence that automation brings job displacement, suggests that we face the choice of trying to insure enough jobs, or of taking advantage of the new free time to benefit from abundance. Seen as needed is a new social philosophy which will justify a different distribution of income and a top level commission is proposed to determine what an ideal educational pattern ought to be in the context of technological reality. John W.C. Johnstone suggests that while continuing education has a role in preparing people to cope with more leisure, those who may have the most leisure (lower class) are the least prepared to cope with it and the most reluctant to turn to educational pursuits. Jack Weinberg examines man's ambivalent attitude toward the machine and discusses the possible psychological results of the loss of work as the prime vehicle for finding meaning in life. (dm)

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PERSPECTIVE ON AUTOMATION:

Three Talks To Educators

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JACK WEINBERG

CENTER *for the* STUDY OF LIBERAL EDUCATION FOR ADULTS
at Boston University

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PERSPECTIVE ON AUTOMATION:

Three Talks To Educators

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INTRODUCTION

These papers dealing with aspects of automation were presented at the Twelfth Annual Leadership Conference of the Center for the Study of Liberal Education for Adults, March 13, 1964. We selected automation as the topic for deliberation for very obvious reasons: it is one of the crucial issues of our time and one with many implications for higher adult education.

The subject is more easily selected than managed--it is large and complicated and it is highly controversial. With respect to the enormous scope of the issue, rather than attempt a summary of the whole which would have been of necessity so oversimplified as to become meaningless, we are dealing with one perspective of the total problem. Thus we select one way to begin an examination of automation and to consider its implications for adult education.

The question of controversy covering automation is another matter. Most persons, who have thought about it at all, tend to reach extreme conclusions. One wing refuses to be alarmed and regards automation as just another phase of the industrial revolution. According to this argument, mechanical inventions beginning with the wheel have always caused dislocations, but they are temporary. Gradually new jobs and new life styles emerge and the outcome is a higher standard of living for all society. The other wing cries havoc and views cybernation as a revolutionary force distinctly different from earlier phases of industrialization. According to this group, automation impinges upon our social and psychological as well as economic existence and we must take drastic measures to survive.

Essentially, there are two points at issue--the meaning of the economic data and the human implications. One wing finds evidence to minimize the extent of economic change and the other finds evidence to maximize it. From both points of view extensive training will be required to manage the automated machine, but depending on the way the facts are organized, opinions differ in regard to the urgency of the situation and the amount of time we have to prepare outselves for a cybernated society.

Concerning the human and social implications, the first group admits that adjustments will be necessary, but either sees the change as no different from earlier innovations, or regards the human dislocation as unfortunate but irrelevant in the long view of relentless economic progress. The opposite side, with which in planning our conference we aligned ourselves, believes the effect on human beings will be significant, more so than earlier phases of industrialization, and urges society to take vigorous action to ward off serious problems.

The historical analogy is comforting if one is prepared to oversimplify history. In fact, history does not repeat itself with such nice precision. One need not search far to note significant differences in the impact on people of the wheel, power driven machines, and the mass production techniques of Henry Ford. And in recent years we have seen how nuclear bombs have destroyed this sort of historical analogy in regard to war. But beyond that, we are not prepared to be relatively unconcerned for the individual. The fact that earlier phases of industrial innovation caused severe dislocation of people and social organizations is no reason to assume that it must happen again. Indeed, if history has any lesson it is the warning of past failures to recognize the facts of dislocation and prepare for them.

Although we do not necessarily endorse every opinion expressed by the authors of these papers, they were selected by CSLEA on the basis of an underlying agreement that automation represents a serious crisis demanding more drastic measures than earlier phases of industrial innovation. Robert Theobald, economist, author, and speaker, is an outstanding proponent of vigorous measures for survival in the age of cybernation. In this paper he musters economic data to argue that we face a serious crisis which will only be resolved by basic changes in our social, economic, and educational systems. John W. C. Johnstone, sociologist and director of a major study of American adult education, discusses attitudes and motivations of adults relating to participation in adult education. His findings point to a paradox that those with the greatest amount of leisure are less motivated to continue their education. Jack Weinberg, psychiatrist and teacher, writes about the human relationships of man and his machines and emphasizes the appearance of complex psychological problems emerging from automated technology.

We believe these are thoughtful statements. Whether one agrees completely with the authors or not, these papers should provoke readers to further thought and action in one of the most critical areas of our age.

". . .There is a crisis in the United States;
its manifestations are unemployment, poverty,
and social unrest, but its moving force is the
thrust of technology . . . ."

EDUCATION AND THE CYBERNATION REVOLUTION

by
Robert Theobald

In this two part paper, Dr. Theobald deals first with the evidence about cybernation and the economic and social realities in the oncoming cybernated era, and secondly with the possibilities of education to help solve the human problems created by rapid automation.

Robert Theobald is a consulting economist, author of The Rich and the Poor, The Challenge of Abundance, and Free Men and Free Markets.

I.

A New Socio-Economic Era

We are entering a new socio-economic order. Its requirements are as different from those of the industrial era as those of the industrial era were different from the agricultural. In the agricultural era, human skill combined with human and animal power in a system which provided a minimal standard of living for the vast majority of people and a leisured existence for a small elite. In the industrial age, which we are now leaving, human skills were combined with machine power to provide great wealth for a few, a reasonable standard of living for most, and abject poverty for those unable to find a place within the productive system. Today the cybernated productive system is emerging--an innovation in productive techniques and organization based on machine power and machine skill--i.e. automated machinery and the computer.

Cybernation is already manifesting the fundamental characteristics of a production revolution: the development of new productive techniques and the subsequent appearance of new principles or organization, a localized beginning and the appearance elsewhere of the same revolutionary productive complex, a complete reordering of man's relationship to his environment and a dramatic total energy increase.

The major difference among the three productive revolutions in mankind's history--agriculture, industry, and cybernation--is the speed at which they developed. The agricultural revolution took place more than 8000 years ago in the Middle East with a shift from a subsistence base of hunting and food-gathering to settled agriculture. However, in the late eighteenth century, when the first manifestations of the industrial revolution were appearing in England, a significant number of human societies retained a material base of hunting and gathering. By contrast, in the less than 200 years since the emergence of the industrial revolution, direct and accurate knowledge of the new productive techniques has reached most of mankind.

The beginning of the cybernation revolution is localized here in the United States, and now in the 1960's. The problems posed by the cybernation revolution are part of a new era in the history of all mankind, but they are first being faced by the people of the United States and their early successes, or failures, will have a continuing effect on the course of the new revolution.

It is still impossible to describe the exact pace or the full sweep of the cybernation revolution. It is already clear, however, that the rate of productivity increase has risen with the onset of cybernation, that an industrial system postulated on scarcity has been unable to distribute the abundant goods and services available from a cybernated productive system, that surplus capacity and unemployment have therefore continued at excessive levels over the last six years, that the underlying cause of excessive unemployment lies in the fact that the skill levels of machines are rising more rapidly than the educational achievements of human beings, and that as a consequence of all these trends a permanent poverty-stricken class is emerging in the midst of potential abundance. The evidence for each of these statements will be taken up in turn.*

---

* This section is based on a document published by the Ad Hoc Committee on the Triple Revolution.

First, the increased efficiency of machine systems has been demonstrated by the more rapid rate of increase in productivity per man-hour since the start of the sixties which coincided with the real beginnings of the cybernation revolution. According to the 1964 Manpower Report, productivity per man-hour has risen at an average pace of 3.6% in 1960-63--a rate well above the historical average of 2.4% between 1909 and 1963 and also the overall post-war rate of 3.0%.

Companies are now finding cybernation increasingly attractive. Even at this very early stage of the cybernation production revolution, costs have been lowered to the point where the total cost of a highly-durable machine may be as little as one-third of the current annual wage-cost of the workers it replaces. A further rise in the rate of productivity increase per man-hour is certain in coming years.

Second, it has proved impossible in recent years to increase demand with sufficient rapidity to bring about the full use of either men or machines. The task of developing sufficient additional demand will become progressively more difficult as the Gross National Product increases. It has been stated by the Department of Labor that a $25 billion annual increase in Gross National Product will be required to prevent unemployment from rising in the immediate future--this figure makes no allowance for the $40-60 billion increase which would be required to bring unemployment rates down to an acceptable level. A $40 billion annual increase would have to be absorbed before the end of the sixties, a $50 billion annual increase during the first half of the seventies, and a $60 billion annual increase well before the end of the seventies. We would have to absorb a $150 billion annual increase in production by the end of the century. Even these figures are minimal for they make no allowance for the further rise in production which will result from the productivity increase due to cybernation.

Third, unemployment rates have remained around or above the excessive rate of 5.5% during the sixties. The unemployment rate for teenagers has been rising steadily reaching 17% in 1963. The unemployment rate for Negro teenagers was 27% in 1963, while the unemployment rate for teenagers in minority ghettoes often exceeds 50%. Unemployment rates for Negroes are regularly above twice those for whites, whatever their occupation, educational level, age, or sex. The unemployment position for other racial minorities is equally unfavorable.

These official figures seriously underestimate the true extent of the unemployment problem. In addition to the 5.5% of the labor force who are officially unemployed, nearly 4% wanted full-time work in 1962 but could only find part-time jobs. Methods of calculating unemployment rates--a person is only counted as unemployed

if he has actively sought for a job recently--ignores the existence of a large group who would like to find jobs but who have not looked for them because they know there are no employment opportunities. Underestimation for this reason is particularly severe for people in groups whose unemployment rates are high--the young, the old, and racial minorities. Willard Wirtz, Secretary of Labor, has stated that at least 350,000 young men between 14 and 24 have stopped looking for work. Finally, many people in the depressed agricultural, mining and industrial areas, who officially hold jobs but who are actually grossly underemployed, would move if there were real prospects of finding work elsewhere. It is therefore reasonable to estimate that over eight million people are looking for jobs today as compared to the four million shown in the official statistics.

Even more serious is the fact that the number of people who have voluntarily removed themselves from the labor force is not static but increases continuously. For these people the decision to stop looking for employment and to accept that one will never hold a job or will not hold a job again is largely irreversible, not only in economic but also in social and psychological terms. The older worker calls himself 'retired': he cannot accept work without affecting his social security status. The worker in his prime years is forced onto relief: in most states the requirements for becoming a relief recipient bring about such fundamental alterations in an individual's total material situation that a reversal of the process is always difficult and often totally infeasible. The teenager knows that there is no place for him in the labor force but at the same time is unaware of any realistic alternative avenue for self-fulfillment.

Statistical evidence of these trends appears in the decline in the proportion of people claiming to be in the labor force--the labor force participation rates. The recent apparent stabilization of the unemployment rate around 5.5% is therefore misleading: it is primarily a reflection of the discouragement and defeat of people who cannot find employment rather than a measure of the economy's success in creating enough jobs for all those who want to find a place in the labor force.

Fourth, an efficiently functioning industrial system is assumed to provide the great majority of new jobs through the expansion of the private enterprise sector. However, during the period 1957-1963, about 45% of the employment increase was in government, just under 20% was financed by government procurement, and over 15% by growth in the number of jobs was created by private demand--and only one-third of this increase was in full-time employment. Job creation in the private sector has now almost entirely ceased, except in services. Many authorities are convinced that the application of cybernation to certain service

industries, which is only just beginning, will be particularly effective and believe for this reason that no significant job creation will take place in the private sector in coming years.

Fifth, cybernation has raised the skill level of the machine. According to Willard Wirtz, the machines being produced today have, on the average, skills equivalent to a high-school diploma. He has added, "Some (machines) even have college and post-graduate educations." If a human-being is to compete with such machines, therefore, he must at least possess a high school diploma. The Department of Labor has estimated, however, that on the basis of present trends as many as 30% of students will be high school drop-outs in this decade.

Sixth, a permanently depressed class is developing in the United States. Some 38 million Americans, almost one-fifth of the nation, still live in poverty. The percentage of total income received by the poorest 20% of the population has fallen from 4.9% to 4.7% since 1944. Movement out of the ranks of the poor is increasingly difficult for it depends on an adequate education, while conscription of new and apparently permanent recruits continues.

The best summary of the effects of these trends was made by the Secretary of Labor:

> The confluence of surging population and driving technology is splitting the American labor force into tens of millions of 'have's' and millions of 'have-not's.' In our economy of 69 million jobs, those with wanted skills enjoy opportunity and earning power. But the others face a new and stark problem--exclusion on a permanent basis, both as producers and consumers, from economic life. This division of people threatens to create a human slag-heap. We cannot tolerate the development of a separate nation of the poor, the unskilled, the jobless, living within another nation of the well-off, the trained, and the employed.[1]

Such a picture appears radical but it is conservative compared to the views of an authority such as Richard Bellman, a computer expert of the Rand Corporation, who was reported by the Chicago Daily News to have said:

> Industrial automation has reached the point of no return: the pace will increase astronomically in the next decade.
>
> The scientific know-how to automate American industry almost completely is already available and is certain to be used.

> Banks could cut their staffs in half easily by further automation; the steel and automotive industries could increase their use of automation a hundred-fold.
>
> Lower and middle management as well as production workers will be displaced for there will no longer be a need for decision-making at that level.
>
> Unemployment resulting from automation would be greater right now except that industries are holding back--at a sacrifice to their profits . . . to avoid increasing the severity of the problem. Self restraint on the part of industries cannot continue indefinitely.
>
> Automation itself will produce few jobs.
>
> Two percent of the population--by implication the 2% at the upper administrative levels--will in the discernible future be able to produce all the goods and services needed to feed, clothe, and run our society with the aid of machines.[2]

Concern about the effects of cybernation has spread rapidly in recent months. In December, the Research Institute of America, a management advisory organization, published a bulletin which began in the following way:

> The moment of truth on automation is coming--a lot sooner than most people realize. The shattering fact is that the United States is still almost totally unprepared for the approaching crisis. It's already clear that no one has any real <u>solutions</u> to the problems of automation. There are no master plans that work, either in government offices or in union or industrial headquarters. As a result, there'll be a great deal of anguish and dislocation as emergency adjustments are made, crash programs improvised.
>
> This Report cuts through the confusion and wishful thinking on automation to define the problems and most likely 'answers.' It makes unpleasant reading, for this much is already certain: The actions taken to cope with the coming crisis of automation will be <u>more</u> radical than business and government leaders publicly admit.
>
> First fact to grasp: Automation has just BEGUN to bite in. Up to now, techniques have been in the process of development; today, the major systems are complete. From this point on, they'll be spreading rapidly. The

> effect will be revolutionary on everything from office and plant to society itself.[3]

The cybernated era is not just an extension of the industrial era. If we continue our present attempt to treat it in this way, we must anticipate a severe socio-economic crisis not only in America but also throughout the world. The task confronting us is to determine the true nature of the cybernated era and then to develop policies which will allow us to move from the industrial era to the cybernated era with the least amount of disruption. Our present socio-economic system was designed to encourage the production of additional goods and to distribute 'scarce' resources: it does not provide a satisfactory basis for an abundant socio-economy.

In order to examine how a cybernated socio-economic system might operate, we must first be fully aware of the constraints of the present and the criteria on which present decision-making is based. In our existing system it is essential that effective demand should rise as fast as available supply: that is to say, the amount people are willing and able to buy must rise as fast as the amount corporations, firms, etc., are able to produce.

This requirement follows from the fact that the viability of our present socio-economic system is based on a very simple relationship; it is assumed that it is possible for the overwhelming proportion of those seeking jobs to find them and that the income received from these jobs will provide adequate funds to allow the job-holder to live with dignity. As a corrolary, it is assumed that those without jobs are lazy or worthless: they are therefore provided with minimum incomes on a charity basis. The successful functioning of the present socio-economic system is therefore completely dependent on an ability to provide enough jobs to go round while failure to achieve this destroys the viability of our system. In turn, provision of the required number of jobs depends on their being enough people who are willing and able to absorb a sufficient volume of goods and services to ensure effectively full employment.

It is for this reason that businesses of all sizes, economists of all persuasions, and politicians of all parties essentially agree that it is necessary to keep effective demand growing as fast as available supply: government and industry, therefore, both work to encourage increases in demand and foster economic growth. We have already seen that their measures have not been successful; we must now understand that even despite their failure they are changing the nature of our system.

The main drive of the Administration's present internal economic policies can, of course, only be understood in terms of its desire to promote economic growth and minimize unemployment. For these reasons, it is adjusting internal taxation rates, changing monetary policy, and altering rates of interest. It is making efforts to reduce tariff rates throughout the world so as to increase American exports and total production. It is the prime mover in the development of electronics, space, civil aviation, etc., which are today's growth industries. These activities force the Administration into decisions which range far beyond the classical Western idea of the correct goal of government.

One new role for the American government can be perceived in the provisions of the 1962 Trade Expansion Bill which gave the President power to reduce tariffs by 50%. At this time, the government accepted the argument that those who lost their jobs because of a decrease in foreign competition which could be traced to such tariff changes should be given unusually high unemployment compensation. Similarly, firms whose competitive position was threatened would be given special aid. This new approach raises new questions. If the government is responsible for damage to industries resulting from its decision to reduce tariffs, why is it not responsible for damage resulting from <u>all</u> changes in government policy which adversely affect the competitive position of any industry? If this doctrine were in fact extended, what would prevent the government from being as hopelessly snarled in the adjustment problems of industry as it already is in agriculture?

In 1964, a further innovation in American policy occurred--it was rather generally agreed that the government had the right to alter tax rates and incur a budget deficit in order to stimulate the economy. Unfortunately, the framers of the tax bill appear to have been unaware of either the social or the economic implications of the tax bill.

The changes in the rates of income and corporate taxes do not appear to have been fully examined in terms of their social or economic effects. On the contrary, the distribution of the benefits of the tax-cut seems to have been based, almost entirely, on political realities and to have been designed to ensure the maximum favorable number of votes in Congress. As a result, a very large proportion of the increase in income went to those who are already rich and very little to those with low incomes. Each person will, of course, evaluate this decision on the basis of his own ideas as to a just distribution of income.

Views about the 'right' distribution of income are individual and ethical: there can therefore be no final agreement about the right decision. There are, however, certain economic constraints which also seem to have been ignored in determining the pattern

of tax cuts. Keynes proved in the 1930's that it is impossible to sell when people are unwilling or unable to buy. Keynes, of course, put this truism in more complicated terms, pointing out that if people saved too much money--more than other people were willing to borrow to use for consumption and investment--the economy would not be able to operate at full capacity and that people would therefore be unable to find jobs and machinery would remain idle.

The United States has suffered from underemployment of men and machines since the middle of the 1950's--there is every evidence that the result of the tax cut will worsen the situation. Much of the money which has been released has gone to those with high incomes and such people are more likely to save rather than spend--Fortune has estimated that the percentage of saving, which rose from 7.0% in 1962 to 7.6% in 1963 will rise to 8.5% in 1964. Such a rate is clearly excessive compared to the needs of firms for investment--almost all companies are obtaining so much money from profits and depreciation that they have little need to borrow to finance their expansion.

In addition, the encouragement of capital spending, which has been government policy for many years, results in a second danger. Almost all capital equipment purchased today will be several times more efficient than the machinery it replaces. Any boom in expenditures on capital equipment--a boom which now appears likely--seems almost certain to lead to a substantial worsening of the unemployment problem as new equipment is installed.

The economy of the United States is no longer able to function without participation by the government and this will determine the direction of social and economic development. This is also true of business, whose production, selling, and advertising decisions change the nature of the world we live in. Industry is constantly driven by its need to recruit new consumers and thus increase sales and maintain profits. Businessmen are completely aware that the survival of their company no longer depends on their ability to increase production but rather on continued growth in sales. Total national expenditures on research and development, advertising, and packaging have therefore grown so rapidly as to raise the possibility that the amount spent nationally to influence the consumer may come to exceed the amount spent nationally on formal education. In addition, expenditures on 'consumer seduction' will compete more and more directly with formal education as firms spend increasing sums of money to influence the highly susceptible teenager and even the grade school child.

There is a tendency among business commentators to argue that concentration of selling, rather than production, does not introduce any major new element into the socio-economic system: this is obviously untrue. Concentration on selling forces the industrialist to make decisions about the pace and direction of development of our society. The items he decides to produce are those he will later influence the consumer to buy: there is little evidence to suggest that the goods the industrialist believes he can sell will be identical with those realistically needed by society.

The consequent power of the large firm over the direction of society is enhanced by the fact that the constraints over its pricing policy--although greater than in the past because of increased competition between products and materials--are still so limited that it can provide higher wages and salaries than those in any other sector of the economy. Firms are therefore able to attract the best brains and to use them for their limited purposes--which are certainly not identical with those of the total society and which may indeed run increasingly counter to the real needs of society.

The Western world faces a choice. We can continue to rely primarily on our present method of distributing resources--through the holding of a market-supported job. If this is the case we will have to accept the continuance of our existing "whirling-dervish economy dependent on compulsive consumption," as Professor Gomberg described it. We will have to accept that most of the energy of our societies will be spent in trying to ensure the creation of enough jobs at a time when most goods and services can be more adequately produced by machines.

Alternatively, we can accept the fact that the coming of cybernation--with its ability to carry out all repetitive mental and physical tasks--can be used to free man from meaningless toil. We can find new ways to allow people to benefit from the potential abundance made possible by cybernation. We can use our societal energy to develop the human qualities of human beings--and to develop a culture far above anything which has ever existed in the past.

My personal choice is clear, for two reasons. First, I believe that it will not be possible to provide enough jobs to go round for even one decade into the future--even if the Executive Branch, Congress, Business, Labor, and all other groups would cooperate to achieve this result. There is, therefore, every advantage in recognizing this fact <u>immediately</u> and to starting to revise our society before we are faced with an <u>acute</u> crisis caused by the more or less complete breakdown of both our social and our economic system.

Second, we must recognize that our present socialization pattern is resulting in the development of a totally new form of society. Our educational system--which must include the television programs seen by children--can only be realistically viewed as a preparation for frenetic consumership, permanent debt, and a round of pleasure. The educational system can, in fact, be said to serve us well, for these are indeed the requirements for the continued operation of our present system. They will continue to be necessary to the continued operation of our society unless we are willing consciously to exert ourselves in order to change the present socio-economic system. We can see the result of failing to make changes in our present system in the almost uncanny prescience of a whole group of writers who we keep at a distance by calling their work science-fiction--Huxley, Orwell, Capek, Heinlein, and many others.

I, personally, do not like the worlds portrayed by these writers. I am aware that this is a value judgment reflecting my own beliefs. Each person has, of course, the right to evaluate the desirability of such worlds in which the freedom and dignity of the individual are destroyed. He does not, however, have the right to ignore the certainty of their development unless we carry through fundamental changes in our concepts of social and economic organization.

Cybernation inevitably means that both the human muscle and the human mind will be disengaged from the productive system. Gerard Piel, publisher of Scientific American, has put this concept in these words:

> The new development in our technology is the replacement of the human nervous system by automatic controls and by the computer which ultimately integrates the functions of the automatic control units at each point in the productive process. The human muscle began to be disengaged from the productive process at least a hundred years ago. Now the human nervous system is being disengaged.[4]

The human being requires a role: cybernation is depriving him of his existing role and is making him vulnerable to centralized control, both economically and socially. The nightmares of the science-fiction writers are almost upon us unless we understand the realities and the necessities of a cybernated world and bring up our children so that they can deal with its complexities and live within it.

We must realize that there is no shortage of productive resources to allow us to provide every American with a decent standard of living and a full education. This is not the problem.

Our difficulty stems from the fact that we do not agree that resources should be provided to those people who cannot find market-supported jobs. It is only when we recognize that it is not only desirable but also economically and technologically essential that we provide everybody with the resources to develop themselves to the fullest possible extent in a cybernated world that we will be willing to adopt new distributive mechanisms. When we are ready to adopt new mechanisms, they will not prove difficult to find.

Our main problem is to develop a new social philosophy which will justify a different distribution of income. In my discussions with my economist colleagues, I have found an unwillingness to give consideration to such an idea for they believe, correctly, that it would destroy the present economic order. Normally, today, they accept the idea that unless changes in our system are made poverty will increase and unemployment will rise--particularly among the young, the old, and minority groups. However, economists of my acquaintance usually seem to conclude their discussions with the statement that these are social problems and not economic--and that they therefore have no immediate responsibility for them.

These are not unsophisticated men. They are aware of the problems stemming from the collapse of values in both government and business--problems dramatized most recently in the Profumo and Baker scandals. They are aware that morality is breaking down in our society--a fact dramatized by the precipitous rise in crime rates. They are aware of the erosion of values among the poor where the unemployed increasingly feel 'justified' in stealing from the employed, i.e., the unemployed feel they have been deserted by society and they are therefore entitled to redress the balance in any way they can. Some of them are even aware that the first reaction of many Negro teenagers after the Birmingham bombing was to go out and murder a few whites at random.

Knowing all these facts, my economist colleagues still argue that they do not need to worry about the effects of social factors on the economy. Why do they feel this way? It seems to me that they have become so enmeshed in their own model of analysis that they believe they are entitled to ignore the factors which their model excludes. Indeed, they only too often come to believe that if a fact or relationship doesn't fit into their existing model of analysis, it cannot be important. It is for this reason that they seem able to close their eyes to the possibility that growing social disruption might be the cause of a severe social and economic crisis.

Our most urgent task is to recognize that the availability of abundant resources is the one factor which may give us enough

freedom of action to allow us to move before we are overwhelmed by social and economic breakdown--both national and international. I believe that we must adopt new policies which not only shore up the present system but which build stronger supports under the new cybernated era.

Our first problem is to break the link between jobs and incomes so that we can begin to plan on a social basis. I can see no alternative in the cybernated era but to provide every individual with a constitutional right to an income adequate to allow him to live with dignity. No governmental agency, judicial body or other organization whatsoever should have the power to suspend or limit any payments assured by these guarantees. Such an absolute constitutional right to an income will recognize that in an economy where many jobs already represent make-work in any social sense and where the requirements for workers will decrease in coming years it is ludicrous to base the right to an income on an ability to find a job.

Those of you who have read Edward Bellamy's Looking Backward will appreciate the effect I anticipate following the abolition of the necessity to strive for a job. I agree with many of his arguments: in particular that it is the structure of our system which forces much of the crime and the anti-social behaviour. Nevertheless, a proposal that everyone should be given an income whether he carries out a conventional market-supported job or not needs deep evaluation, for it would revolutionize our economy and society. However, I know of no alternative which is adequate to deal with the fact that there will not be enough jobs to go round in coming years.

Indeed, this will not be enough. Not only will there be an increasingly inadequate number of market-supported jobs for those with lower levels of education and skills, but it can also be expected that many of those now engaged in middle management and similar occupations will lose their present jobs and be felt by prospective employers to have insufficient intellectual flexibility to take on new types of work. The drastic and abrupt drop in income which will follow will mean that members of this group will find themselves suddenly unable to meet the expenditure commitments already undertaken as part of their way of life, both on a day-to-day basis and incorporated in their long-term plans. In contemplating the possibility of hardship for the individuals in this group we should not forget that their personal difficulties will have far wider implications for society as a whole. For just as individuals need the support of some form of basic economic security, society needs support for its standards and a source of initiatives and drive to move it toward its goals. It is this support, these initiatives, and this drive which are supplied by this group. As an alternative to allowing the complete disruption of the way of life of

the standard-supporting and societally useful group, it is necessary that a method should be devised to maintain its levels of income.

Any economic security plan would need to ensure that the ordering of the level of government payments, and the bases for the levels at which they are set, do not appear arbitrary or unjust to any section of society. Such a plan should be aimed at uniting the social and economic interests of all sections of society for the common good, and should be designed to eliminate the present causes for resentment on the one hand, and opposition to necessary social change on the other.

Once this step has been taken, we will be able to carry through change in other areas of the economy and society. The following represent those areas where change is most urgently required:

1. As there will not be enough market-supported jobs to go round, new concepts of meaningful activity must be developed for those no longer required within the productive system.

2. As cybernation makes possible almost unlimited production, we will have to develop new social constraints which will limit consumption to the level which will allow the full development of human beings without destroying the world's resources.

3. The necessity to practice conservation will also force us to develop an ethic which will limit the rate of increase in population.

4. As it is now possible to wipe out the total population of the earth with nuclear, chemical and bacteriological weapons, we must stop resorting to war as a means of deciding issues.

5. Because our society is now so complex, evolution into a new structure consistent with the new realities depends on correct decision-making. This, in turn, depends on full and accurate information. Society will therefore have to develop effective sanctions against public-relations distortions and deliberate lying.

There is a crisis in the United States: its manifestations are unemployment, poverty, and social unrest, but its moving force is the thrust of technology as a total system which is remaking our socio-economic system to fit its <u>own</u> needs and not our needs as human beings. It is conceivable that mankind will be destroyed by the dehumanizing impetus of oncoming technology.

The thought that the United States is threatened by the final attainment of one of its most desired goals is repugnant to American thinking. However, many forces threaten to break loose during the sixties and have the potential to sweep us irresistably toward a type of society completely alien to our basic beliefs. The outlines of the foreseeable future already cast their shadow on the present: we will need all the time we now have if we are to research and analyze the implications of abundance and make the necessary changes in our socio-economic system so that we can benefit from abundance rather than be destroyed by it.

It is in this perspective, that the obsolescence of both 'liberal' and 'conservative' doctrines becomes evident. Once we recognize the existence of a cybernated era and consequent abundance, the differences between these philosophies can be seen for what they are: opposing opinions about means rather than goals. The fundamental aim of both conservatives and liberals is the preservation of the outmoded industrial scarcity socio-economic system in an era of abundance.

Because both Conservatives and Liberals are still committed to operating within the existing industrial system, they have failed to grasp that the coming of cybernation outmodes it. Before the end of this decade, it will be cheaper and more effective to carry out the vast majority of repetitive physical and mental tasks with the aid of machines rather than men. At this point the industrial system will no longer function because the fundamental social and political requirements for its continuance will no longer exist.

II.

Continuing Education: Key to the New Era

We have seen, in recent years, a growing conviction among social thinkers that increased emphasis on education is the key to the solution of the problems of cybernation. Education, it is believed, can provide the individual with the skills he needs to adapt to a cybernated age; it can also keep large numbers of people out of the labor market. In a way, we seem ready to pass the responsibility for providing the drives and underpinnings for society from the economist to the educator.

One evidence of this new emphasis on education is the number of proposals being presented to increase the amount of time and money devoted to education. Let me name several that seem to me among the most important.

The National Education Association's project on the Educational Implications of Automation (largely financed by IBM) made

this proposal: "Given the historical trend toward a shorter work-week, we suggest that the present 40 hours be maintained, but that only 36 hours be devoted to productive labor, with the remaining four hours given to education."[5] More recently, the Educational Policies Commission of the National Education Association urged that two additional post-high school years be added to the public education program.

A similar suggestion came from Willard Wirtz, Secretary of Labor, early in 1964. He recommended that young people be kept in school two years beyond the present age limit of sixteen years, and that two years of free public education beyond high school be provided for all.

At about the same time, Edwin F. Shelley, a Director of the National Council of the Aging, offered this plan:

> . . . . We (should take) every worker out of the labor force for one year, after he has worked for twenty years, and arrange for him to be paid his salary and educated for that year. Therefore, to meet the national requirements of full employment and life-long education, I propose the establishment of a national system of Earned Educational Leave . . . . I do not propose to suggest a curriculum, but I believe that the term 'education' should be interpreted in the broadest sense and should be appropriate to the adult in our society.[6]

While the problem of financing massive educational ventures is not my major concern, it is worth stopping for a moment to note the enormous expenditures called for at a time when we are failing to keep up with the increased need of educational facilities for even the regular college-age students.

Peter Drucker estimated that in order to take care of the university students who can be expected to be on the campus in 1975, even on the basis of our present concepts of education, the colleges will have to construct new facilities equal to twice all the campus buildings erected since Harvard opened its doors in 1636.

The recent report of the Educational Facilities Laboratories, Inc., sets out the implications of the surge in building in financial terms:

> . . . . the government predicts that $19 billion will have to be spent on college construction and campus development between now and 1972 . . . . The over-all gap between construction and needs is running at about $750 million a year. In other words, the colleges are spending about $1.2 billion a year on construction instead of the $1.9

> billion the experts say is required . . . . (Colleges) are taking money out of endowment and current income to pay for new buildings. And some of them have counted on the use of federal aid funds and commercial loans that have not been forthcoming . . . .[7]

The potentials of cybernation could make it possible to provide the resources required for the new forms of education if the people and the government decide they want them. But so far there have been few signs of a willingness even to come to grips with the implications of population increase, and to recognize that the vast increase in college facilities and personnel now needed for youth will probably require a massive increase in 'no strings' grants from the federal government. Financing a dramatic increase in the proportion of a life-time spent in education has only dim prospects unless there is fuller realization of the implications of the cybernated era.

But, the problem of financing an educational explosion is the least of our problems. A much greater one is the failure to recognize that the philosophic basis for our educational system has been outmoded by the coming of cybernation. It is to this aspect of the subject that I want to address myself in the remainder of this paper. I hope that you will keep in mind, as I do, that I lay no claim to being an educator, and that I am primarily concerned with present educational thinking in terms of the realities of the second half of the twentieth century which I <u>have</u> tried to study.

If we look at the historical record, we can see that the American educational system had one primary social goal in the nineteenth century--the assimilation of successive waves of immigrants into the United States. The educators of that period saw clearly what the major purpose should be. They knew it would be impossible to build a nation unless the children of immigrants felt themselves to be part of America, and not tied to their parents' nation. Nationalism and the three R's were, therefore, the key ingredients of the rural school, where all social classes and grades studied under one roof.

In the last sixty years, as America has ceased to be rural, and has become urban and suburban, the three R's have become totally inadequate to the needs of workers. The demands of the industrial system have forced drastic changes in our educational patterns; the institution of education has had to gear itself to the development of the types of people needed by the industrial system.

Thus, the school and the university today can be understood only when viewed as an adjunct to the needs of the industrial system. They serve its requirements, and for this service they are

provided with just enough resources to prevent them from breaking down completely. This is a harsh judgment and I wish it were not justified. But how many of us would care to argue that the ideals of liberal education have an equal claim with the practical goals of preparing individuals immediately attractive to employers? Which of us can truly believe that the typical local school system aims to give meaning to the life of those it teaches--as opposed to turning out the types of workers which the industrial system wishes to use? Liberal education is truly an outcast--surviving in the cracks and crannies of the overall education system. It is provided as a sop to those 'oddballs' who find their lives in the industrial system too unsatisfactory.

This is, of course, not surprising. Societies have always taught what is honored--and honor has recently gone to the industrial system which has been held responsible for economic growth. But although this fact is <u>not</u> surprising, it <u>is</u> disastrous. Education to function in a cybernated world has little in common with the type of education required in an industrial age. Our educational system thus confronts a crisis, and the obvious response is to begin the process of adapting it to the cybernated era. Unfortunately, we still do not know enough even to begin the task. The institutions of our society have almost completely ignored the implications of cybernation, and we have therefore no clear knowledge of its requirements or its consequences. What we can be sure of, however, is that they will be enormous and that they will begin to be severely felt very soon.

A few things have become obvious, however. We know, for instance, that cybernation will permit the production of enough goods and services to provide every individual on earth with a reasonable standard of living. Through cybernation we can make certain also that human beings will spend far less time in toil to produce goods and services, and far more in activities which they themselves choose. Thus, it should be clear that in the cybernated age, education must hold a place at the center of society. But it must be an education that provides the individual with the internal resources to live his own life, rather than to fit into an industrial system.

Inadequate knowledge on which to base change in the educational system is not our only difficulty, however. We are faced also with the fact that we are at least two generations too late in beginning the task. We should have started to move toward an educated and leisured society as soon as capital was available above the immediate needs of the system for investment and above the rewards required for those whose leadership was supplying the drive.

Edward Bellamy saw this as long ago as 1887 when his extraordinary book, Looking Backward, was published. His hero, transported through time to the year 2000, is instructed in the educational system of the new age in these words:

> ". . . . Nowadays all persons equally have those opportunities of higher education which in your day only an infinitesimal portion of the population enjoyed. We should think we had gained nothing worth speaking of, in equalizing the physical comfort of men, without this educational equality."
>
> "The cost must be very great," I said.
>
> "If it took half the revenue of the nation, nobody would grudge it . . . ."
>
> "Setting aside the actual cost of these additional years of education, we should not have thought we could afford the loss of time from industrial pursuits. Boys of the poorer classes usually went to work at sixteen or younger, and knew their trade at twenty."
>
> "We should not concede you any gain in material product by that plan . . . . The greater efficiency which education gives to all sorts of labor, except the rudest, makes up in a short period for the time lost in acquiring it . . . ."[8]

It has taken us over eighty years to discover the truth in that last comment. Only in the last few years have economists rediscovered education. Now they call it investment in 'human resources,' but it is doubtful that they mean anything more than Bellamy did in 1887.

We cannot of course gain back the time that was lost, nor expect to change quickly the fact that our educational system is still turning out people who can function only in an industrial society. (This is true not only of the vocational schools, which train the air-mechanic on piston planes and--until recently--on biplanes using fabric instead of metal. It is equally true of the mass-produced Bachelors of Arts, whose preparation is designed to attract an employer, not to provide the individual with the values and knowledge needed to live in a leisured society.) We should insist on immediate confrontation of the problem, beginning at once the search for education appropriate to the present need.

Proper patterns of education in a cybernated age will be found only after a clear-cut statement of position with respect to cybernation is first generated, and, after discussion, wins public acceptance. The evolution of such a statement of position thus becomes an essential first step in any program of educational change.

A statement of views about so fundamental an issue of the society can come only from a top-level commission after extended study. Even as I write this, I think I hear you protest: "Another commission--to bring out yet another report representing the lowest-common denominator of educational thought!" I recognize the relevance of the objection, but I believe the work of the commission can be designed in such a way as to prevent the usual pallid report. Let me suggest some guide lines.

First, the commission should not be set up, as these groups usually are, to study the existing educational system in order to report on ways to improve it within the limits of the present industrial system. On such a basis, another report can have no real value. The commission should rather focus its study on what an ideal educational pattern ought to be in the second half of the twentieth century. Only when it has determined the ideal sought, should it go on to consider how the present educational system might be changed into the 'ideal' system.

Second, the commission should not be an isolated agency, struggling on its own to determine the shape of the future world. It should be part of a larger overall study of the realities of our technological world. For this we need to establish an institute and endow it financially in such a way that it will be free from outside pressures as it pursues its grand task of understanding and communicating the nature of technological reality in the latter decades of the twentieth century. The institute's major objective would be to determine how the human race might benefit from the potential of technology. But in addition to this humanistic end, the institute's deliberations (as indeed those of the educational commission) should come to terms with two fundamental realities: First, the cybernated era involves a discontinuity in human affairs so great that all present 'knowledge' must be re-examined in the light of the new situation. And, second, the development of new solutions adequate to the magnitude of the challenge cannot be achieved through competitive bargaining between supporters of a priori positions, whether through labor and management, government and labor, government and management, or any other groups. In the future, solutions will only be found through cooperative problem-solving. The industrial society was probably the most competitive of all history; the cybernated society will inevitably be the most cooperating.

Such a commission on education will have to recognize that in coming years education will have to be the generating force in society. We will no longer be able to dodge the classical philosophical issues inherent in our concept of the right process of education and socialization; we will need to re-evaluate the answers given us thinkers of the past, from Plato to Skinner.

When the commission has come to grips with such realities as these, and has come to understand where we should be going, it would then be time for it to come around to the more practical problems of segregated neighborhood schools and overcrowded colleges. Then, too, will be the time to face the fact that the route from the present situation to the future ideal will inevitably involve many compromises, some of them highly unsatisfactory. But, nevertheless, it will remain true that for the first time the educational system would be aiming at an ideal--and not suffering through perpetual ad hoc attempts to avoid complete collapse.

I think that some of the guidelines for the commission's deliberations can be discerned already, for they are inevitable results of the realities of the cybernated world, which implies greatly increased availability of goods and leisure.

1. The liberal education tradition will have to be revived. Robert Hutchins, when he was asked to describe the ideal education, said:

> Ideal education is the one that develops intellectual power. I arrive at this conclusion by a process of elimination. Educational institutions are the only institutions that can develop intellectual power. The ideal education is not an ad hoc education, not an education directed to immediate needs; it is not a specialized education, or a pre-specialized education; it is not a utilitarian education. It is an education calculated to develop the mind . . . .[9]

This may be liberal-cliché in one sense but in another it is the heart of educational wisdom. The non-liberal educator has thought that he could inculcate facts and theories directly without any process of thought in the child. Given today's certainty of ever-increasing rate of change in both 'fact' and theories, it is clear that such an approach is totally invalid. While we have taught accepted theories as unchanging truth in the past, the present scientific and educational revolution will make any continuation of this course disastrous.

While we can, of course, teach only in terms of present knowledge and present conditions, we ought to do so in full recognition of the fact that many current theories and ideas will be superseded in the lifetime of the student. This means that we will have to teach students how people arrived at their ideas and how changes in conditions may affect their relevance, rather than simply giving them knowledge of the ideas that are current. Moreover, our students will need to know how to develop their own philosophy, to work out their own conclusions, and not always to depend on authority. This will require, I think you know, a veritable revolution in our educational practices, but such a drastic change can and must take place.

2. The commission will in all probability consider that with the coming of cybernation, any argument between advocates of strictly academic vs. informal non-academic subjects are outdated. Intellectuals tend to distrust schools which give a prominent place to 'training for leisure' and they would favor using all available time for the 'pursuit of excellence.' Such distinctions are now invalid. We do not have to choose between driver education and the classics--both have value. The right questions now are how much of each, at what age, and under which institution's auspices.

3. The commission will probably stress also in its recommendations a necessary distinction between information and knowledge. It has lately been estimated that the volume of information doubles every ten years. Many argue therefore that it will be essential both to lengthen the period of formal education and to continue the process of fragmentation of the disciplines.

This argument completely misunderstands the situation. The volume of facts is increasing, but facts are what can be well handled by the computer. It is far from clear that the amount of knowledge (i.e., organizing principles) is also increasing at so rapid a pace. Indeed, an examination of my own discipline, economics, makes me suspect that most of the increase in 'knowledge' is only an increase in the private, irrelevant world of each discipline. I am completely persuaded that the hard theoretical core of economics can be taught in one semester to a reasonably intelligent high-school student. Everything else is either factual knowledge or irrelevant to the real world. Education has to help the individual to think and to know how to obtain the knowledge he requires for any particular problem--it should not try to stuff him with facts which can better be stored by the machine.

4. Finally, the commission will emphasize that with unlimited resources it is possible to educate, in our ideal sense, the great majority of the population. Most children even of quite low IQ's, if given a chance to think and develop, are capable of learning. Experiments show a dramatic raising of IQ levels when a chance is afforded. We will not know the true dimensions of the problem resulting from the unequal endowments of human beings until we have really tried to develop the inherent qualities of each child to the fullest, recognizing that each child's potential is unique.

If it appears from these points that I believe I know what a good educational system should look like in the second half of the twentieth century, let me rapidly deny this. I share the general belief that there are no easy answers in education, that all questions are not susceptible to final answers. Even when we go back to the works of the great educational philosophers for guidance, we

go expecting only that they will provide us with insights, not with answers.

In the past, as I've already indicated, education has been able to avoid considering its ultimate purposes, making itself a tool of the industrial needs of society. It has simply provided education to meet these needs. In the future society will require that each person be educated to the fullest extent of his individual capacity. Thus education will become no longer a means but an end in itself.

Let me end with a caution. I am afraid that although you may have felt that this discussion has been an interesting mind-stretching experience, you will think that it can all be forgotten as soon as you get back to your jobs in the real world with real problems crying for immediate solutions. And you will proceed to solve them, each separately and in the light of present situation and past experience as it has always been done.

It should be obvious by now that I see real danger in this approach. To me it is quite clear that there is no solution to our present educational problems within the context of industrial values and an agricultural political system. I cannot, for example, see any solution to the problems of the New York schools, or the Chicago schools, or indeed the schools of any other Northern city within our present set of ideas. Similarly, I cannot believe that the university can provide adequate education for its students until it changes its structure. We must recognize that our educational system is in the process of collapse and that we do not presently possess any policy for its resuscitation. Only when we do will we be able to make the effort to change it so that it may serve us in a cybernated age.

The machine can toil more effectively than man. With today's values, with man considering himself primarily a working animal, he can only be devalued and quite probably destroyed by these in a cybernated age. Such dire results, however, can be avoided. The cybernated age need not be a threat; it can be a promise. For the first time in history, we can provide the resources to enable each individual to develop his mind and his body to the full--to give substance to the old dictum mens sana in corpore sano. Neither the professions devoted to developing the body nor those serving the mind are presently ready--or even struggling to ready themselves--for this task. It seems probable that the preservation of the human ideals of individual dignity and freedom depend on the willingness of these professions to accept and respond to the present challenge.

* * * *

1. W. Willard Wirtz. "Year-End Statement." December 29, 1963.

2. Richard Bellman. "Chicago Daily News." June 18, 1963.

3. Research Institute of America. "Bulletin." December 27, 1963, p. 1.

4. Gerard Piel. "Jobs, Machines and People." Center for the Study of Democratic Institutions. 1964. pp. 5-6.

5. Luther H. Evans and George E. Arnstein, ed. "Automation and the Challenge to Education." National Education Association. 1962. pp. 9-10.

6. Edwin F. Shelley. "A Positive Look at Automation." Speech before the Thirteenth Annual Meeting of the National Council of the Aging. February 12, 1964.

7. Educational Facilities Laboratories, Inc. "Bricks and Mortarboards." 1963. pp. 9-10.

8. Edward Bellamy. Looking Backward. Modern Library. pp. 176-177.

9. Robert M. Hutchins. "On Education." Center for the Study of Democratic Institutions. pp. 1-2.

". . . . Continuing education has an obvious role to play in preparing American adults to cope with more and more leisure time. . .(but) for a sizable sector of our population, the virtues of continuing learning are understood and appreciated only in the language of tangible benefits, concrete rewards, and practical gains . . . ."

LEISURE AND EDUCATION IN CONTEMPORARY AMERICAN LIFE

by

John W. C. Johnstone

Johnstone discusses the findings of his study of adult education patterns that have implications for adult education in an automated society.

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One of the most important and most persistent findings which has emerged from the NORC adult education study is that a great disparity exists in the involvement of segments of the population situated at different levels of the social hierarchy in continuing education. In the first part of our study, attention was focused on the rates at which different sectors of the adult population participated in educational pursuits of various types. Our results on this score indicated conclusively that these rates are considerably higher among persons who have more formal schooling, who are located in 'white collar' rather than 'blue collar' occupations, and who occupy the higher income categories. Upon closer scrutiny, it turned out that the most powerful influence among these various indicators was the formal education attained, and that while occupation and income did count for a little, their effects on rates of involvement in adult education were strictly secondary by comparison.

In combination, the effect of all three measures of social position was enormous: through their cumulative influence, rates

of participation emerged from levels of virtual nonexistence to levels which embraced close to one person in every two. For example, among men who had never been beyond grade school, who worked in 'blue collar' occupations, and whose total family income was less than $4,000, only 7 per cent had been active in some type of educational pursuit during the previous year; among men who had been to college, who worked in 'white collar' jobs, and whose income exceeded $7,000, as many as 43 per cent had been involved in some type of systematic effort to learn new knowledge, information, or skills during the previous twelve months.

In subsequent sections of our study, many additional aspects of public reactions to adult education were found to be influenced either by formal education or by the combined impact of one's schooling and economic position. Better educated persons--or those placed higher on the socio-economic continuum--were found not only to be more <u>active</u> in learning pursuits, but also more interested in learning new things, more ready to turn to formal instruction in order to satisfy their learning interests, and more knowledgeable about the existence of facilities for adult learning. Moreover, they were also found to prefer different methods of study, and to have different reasons for taking adult education courses when they did enroll--and for not taking them when they didn't.

As this evidence began to mount, it became increasingly evident that education and learning are perceived and evaluated in radically different ways by persons located at different rungs of the social ladder. The premise that there are distinct 'middle class' and 'working class' orientations to education is hardly a revolutionary one, and the social stratification literature abounds with writings which both substantiate and elaborate this proposition. In the present context, our special concerns were to spell out how social class differences in the meanings attached to education might affect participation in programs of adult learning. And in this latter regard, our evidence was rapidly leading us to the conclusion that the only way the field of continuing education would ever be as successful in recruiting from the 'working classes' as from the 'middle classes' would be for educators to incorporate into their thinking a full sensitivity to the assumptions and meanings which are associated with education and learning by 'lower class' individuals.

What, then, are the principal social class differences in the perception and evaluation of education? The most relevant of these--and the ones supported by the results of our study--were the following:

1. The lower classes place less emphasis on the importance of high educational attainment, and less often aspire to be college-educated.

These tendencies have been noted repeatedly in sociological writings, and they are particularly well documented with empirical support. In reviewing survey evidence concerning how much education people think is necessary to get along in the world, for example, Herbert Hyman has reported that "whatever measure of stratification is employed the lower groups emphasize college training much less."[1]

In the present study, information of a similar nature was obtained when we asked people how far they themselves would like to go in school if they were starting over again, and quite revealing discrepancies in aspiration levels were found among persons in different socio-economic groups. The most clearcut result was that aspirations for high educational achievement were very strongly related to the level of formal schooling a person had already completed himself. Indeed, as between the economic and educational components of one's social class position, the more important influence by far was that stemming from one's own successes in the educational system. On the basis of this result, the generalization that the lower classes place little value on formal education can probably be more accurately expressed by the statement that it is persons without much formal schooling themselves who devalue high educational attainment.

2. A second tendency noted in the literature which found support in our results is one which has been very well articulated by Frank Riessman in his observations on the culturally deprived. "The average deprived person is interested in education in terms of how useful it can be to him . . . . There is practically no interest in knowledge for its own sake; quite the contrary, a pragmatic anti-intellectualism prevails."[2]

In the NORC study, two items of information were collected which had a bearing on this general proposition. In the first, respondents were asked a sequence of questions on the types of subject matter they thought would be most appropriate for a hypothetical course being planned by a local television station. After making specific suggestions as to content, they were asked to choose among three general themes for such a course--the themes being 'practical skills for everyday living,' 'general knowledge about the world we live in,' and 'interests and hobbies for spare time use.'

In reaction to this question a very clear pattern of results emerged: persons in the lower third of the social continuum heavily favored the 'practical skills' emphasis, those in the middle social level also selected this theme most often--but by a much smaller margin, while persons in the upper third of the social hierarchy were much more likely to nominate the course dealing with 'general knowledge of the world.' In other words, in scanning

the social continuum from low to high, it was clear that the dominant orientation to education shifted from an emphasis on usable skills to one placing much greater stress on knowledge for its own sake.

Elsewhere in our interview schedule, more direct measures of anti-intellectualism were extracted--our purest measure being reflected through agreement with the statement: "An education should be put to use; if you don't use it why bother with it." Among persons in the lower third of the socio-economic continuum, some 72 per cent of men and 67 per cent of women agreed with this position; in the upper third, only 35 per cent of the men and 25 per cent of the women endorsed it.

3. In spite of these considerations, we also found that the average lower-class person is less ready than his middle-class counterpart to engage in continuing education even in situations where tangible economic gains are offered as reward.

Our evidence on this point was contained in the answers people gave when they were asked whether they would recommend attendance at evening classes if by doing so a person would have a good chance of receiving a promotion on his job. The results indicated that substantially fewer lower- than middle-class respondents unhesitatingly recommended enrollment. Indeed, among lower-class men, almost two in five indicated at least some reluctance to the idea of turning to vocational education as a means of upgrading one's economic circumstances.

4. The typical lower-class person does not think of education in terms of personal growth or self-realization, and as a consequence is even less ready to turn to adult education for recreational purposes than he is for purposes of vocational advancement.

From the lower-class point of view, education is valuable mainly because it leads to employment and job security. In middle socio-economic groups, this emphasis is also strong although the direct economic benefits of a good education are also stressed widely. In the wealthier and better-educated third of the population, however, the main value of a good education is defined quite differently: a good education is something which in itself makes one a better person, allows one to appreciate more in life, and is worthwhile in its own right. Moreover, in the lower-classes, 'education' and 'learning' are seen as things people are required to do and not as things one would choose to do on one's own, and it is probably for this reason that among these persons formal learning pursuits are simply not very often associated with spare time enjoyment. Indeed, to the typical lower-class individual, the concepts of 'learning' and of 'spare time enjoyment' seem to convey meanings quite opposite in nature.

These considerations, then, help to explain the lower class de-emphasis on recreational learning which was reflected both in our data on what people actually study and in their statements as to what they would like to know more about.

At the same time, of course, there is a reasonably strong case for the contention that it is the lower social classes who are in greatest need of instruction for recreational use. What little objective evidence there is on this point suggests that the lower classes now enjoy as much spare time as do persons in higher socio-economic positions, but at the same time that they have greater difficulty in finding things to do with their time, and are in general less enthusiastic about the prospects of having more free time. All of these tendencies were supported by the findings of our study, and the lower-class under-emphasis on leisure time learning cannot therefore be said to stem from the fact that these persons have no spare time--nor from the fact that they are absorbed with a multitude of concrete leisure time interests. On the contrary, members of lower social groups very clearly do have spare time on their hands, do have less facility at filling their non-working hours, and do have reservations about the prospect of having more time. Our results would indicate, rather, that the under-emphasis stems from very basic social-class differences in the definitions as to what constitute appropriate and meaningful uses of education. Self-fulfillment or personal growth through continuing education--notions which are the central organizing premises of many programs of adult learning--are concepts which simply have no meaning at all to large segments of the population.

The dilemma is that the segment of the population which may soon have the greatest amount of free time at its disposal is on the one hand the least well prepared to handle more free time, and on the other, the least likely to turn to educational pursuits as a way of expanding spare time interests. Thus, while the field of continuing education has an obvious role to play in preparing American adults to cope with more and more leisure time, for a sizeable sector of our population, the virtues of continuing learning are understood and appreciated only in the language of tangible benefits, concrete rewards and practical gains. And it is here, perhaps, that adult educators will face their most critical challenge in an age of automation.

* * * *

1. Herbert Hyman. "The Value System of Different Classes." Class, Status, and Power, ed. Bendix and Lipset. The Free Press. 1963. p. 431.

2. Frank Riessman. The Culturally Deprived Child. Harper and Row. 1962. pp. 12-13.

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". . . . (Man) still looks upon the machine as an ally, a liberator from drudgery and slavery. Yet it threatens not only to relieve him of his work--his great bridge to reality--but ultimately to displace him."

MAN'S AMBIVALENT REACTION TO AUTOMATION

by
Jack Weinberg

Dr. Weinberg discusses the unconscious human reaction to automation and the implication for modern man.

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It is customary today for the psychiatrist to be called upon not only to ameliorate illness, but also in almost every organized attempt to rectify social difficulties and ills. Industry calls upon us to solve its personnel problems; we participate in federal agencies and organizations, where at times our advice is sought even on large issues of domestic and foreign import. We are active in juvenile and domestic relations court, and we consult with social agencies, churches, and educational institutions. And in addition to direct psychiatric services, there are our duties as teachers and administrators in medical schools and psychiatric institutions. As Dr. Roy Grinker said recently, "Psychiatry seems to involve a study of all human behavior and is as broad as life as well as its social and cultural derivatives."[1]

In this state of things, even if we agree that psychiatry is capable of attempting and performing well in all of these areas, we know there are not enough well-trained psychiatrists to answer all these calls. Then what can psychiatrists contribute of their specialty to assist in the economic, sociological, and political

adaptation necessary in the rapidly changing contemporary industrial scene? This is the question that I attempt to answer in this paper.

Through automation, a change in the status-quo has occurred in government, in management, and in labor. The social psychiatrist, always interested in the ways and reactions of men, is particularly interested in all the phenomena of change occurring in what might be termed 'man's primary activity,' i.e., work. From his position (essentially an outpost, although his influence is regular and varied), he sees the new industrial problems as part of his traditional concern--the nature of man as an individual. To the psychiatrist, the problems of man as a biological entity and the fulfillment of his biological needs are definable, concrete, and definite. However, those special qualities which make man human --his common sympathies, passions, feelings, and failures--emotions and conditions significantly part of his work life--are much more abstract, more varied, and more difficult of definition. Because of his inability to articulate, the ambiguous man takes refuge in the obvious, and avoids the latent content of that which is experienced and felt.

The psychiatrist, and indeed all those who have to deal with the human in the being, must learn to deal with the highly personalized legend lurking in the mind of each man--a legend which is secret, most often unconscious, never readily accessible to the daily cliché-ridden verbalization, and to which each man is strangely loyal. Since we are so much addicted to the stylized ritual of communication through the cliché, we often fail to perceive man's dilemma, what actually pains him and motivates his behavior.

It is to this legend behind the cliché, the latent behind the manifest, that I would like to address myself in order to shed some light on the psychological effects of automation--or cybernation as Dr. Theobald calls it--on the individual human being. Certainly it is not within my province nor within my ken to discuss the effects of automation on our economy and society. I am not, however, unmindful or disrespectful of the effects on the individual of his economic state. If I do not seem to mention them it is not because of my disregard of them, but rather my desire to discuss mostly the human unconscious reaction to automation and to <u>work</u>, as they are threatened by automation.

In 1933, Hans Sachs[2], a Viennese analyst, in a little known paper, "The Delaying of the Machine Age," suggested a proposition which may throw some light on our problem. In a review of Roman history, he indicated that the Roman economy was fundamentally a slave economy. With the <u>Pax Romana</u>, the supply of slaves dwindled and man had to find other methods for producing his goods.

Both the needs of the Empire and the structure of the economy would have warranted the use of machines, and the level of Roman mathematics and physics was sufficiently high to make the machine possible. In fact the hydraulic press was known at the time but was used in Roman circuses and in stage performances only as a plaything. Its possibilities for production were not exhibited; it was never used for economic purposes.

Sachs proposed as an explanation for this puzzling rejection, the very important concept of body narcissism of the Graeco-Roman man. This ancient man's investment in his own body, his pride in his own organism, had always made it impossible for him to allow a machine to do what the human body could accomplish. So also, in the period that Sachs was concerned with, the overruling narcissistic importance of the perfect body made it impossible for man to allow a machine to do what his body could do.

It was only with the development of the Christian ethic that the body was degraded and the narcissistic cathexis so far reduced that the projection of the body into a physical object and the surrender of bodily functions became no longer unthinkable. Indeed one may look upon this era as a grand and unavoidable detour, laying the psychological foundation for the creation and development of machines.

There is no area outside of the Christian orbit that has shown a comparable ingenuity in devising, producing, and using machines. The natural sciences gave man mastery over the physical world. An adequate psychology could have given him mastery over man's mind, and rendered him capable of giving constructive direction to other aspects of his own physical power. The age of automation certainly promises us sufficient livelihood and the freeing of the self for a greater realization.

Sachs' thesis is in some ways an over-simplification; within it man's behavior is over-determined. We know that no one thing determines a given piece of behavior; rather, it is the result of a multiplicity of motivations. Man has been able to accept machines not because they come to his aid, nor because of the disappearance of slavery, nor because he has learned to degrade the importance of the physical self. But man has been able to accept machinery through the possibility of identification with it. It is only when he identifies with the machine, when he has something to do with it and can control it, that it is allowed to become part and parcel of his body image--an extension of his physical self. Only then can he accept it.

A far greater difficulty presents itself when it is a matter of accepting computer machines, which the average man--and therefore the vast majority of mankind--does not understand. Complicated

machines which perform in intricate and invisible patterns are frightening. They are beyond the common man's understanding and he cannot identify with them. He experiences hostility toward such a machine, as he does towards most things he fails to understand.

Furthermore, automation has done something that is unthinkable to a man who values his own self and that which he produces. In a sense it has removed him from the product which he creates. It has alienated him contactually from the manufactured goods. To create a relatedness even to inanimate objects one has to come into actual physical contact with them. Reality testing is primitively and therefore also unconsciously rooted in the subjective experiences of our five senses. Cybernation with its almost magical capacity to interpret abstract formulas with concrete end-products adds to the sense of unreality which man so fears and is forced to reject.

Often alienated from object relationships in our fast moving fragmented society, deprived from contact with the manufactured object, the constant interposition of intermediaries between himself and people and things, man feels isolated, alone, frightened, and restless. He is far from acting out his impulses by destroying all machinery, as did the inhabitants of Erehwon in Samuel Butler's Utopian novel. For despite all of man's uncertainty, he is quite ambivalent. He still looks upon the machine as an ally, a liberator from drudgery and slavery. Yet it is moving in on him much too rapidly and threatens not only to relieve him of work--his great bridge to reality--but ultimately to displace him.

However, work--no matter how odious an implication it may have to a person--is an enormously prized and meaningful experience to man. It is not all punishment for his transgressions as implied biblically,[4] but it is also a blessing, not only for the common sense economic reasons, but also (as I have indicated in a previous publication[5]), because of its varied and unifying psychological implications.

A job is part of the identifying data that every human being has. When one asks a man his name and address and where he comes from, the next obvious question is, "What do you do?" This gives a frame of reference within which to operate. It gives us the possibility for a dialogue with that individual. It gives us a structured situation in which we may feel comfortable. If the individual whom you have asked, "What do you do?" has to answer "nothing," he is unfortunately categorized as a 'nothing.' He feels ashamed, as if he were admitting a failure which strikes at the root of his self-worth, self-esteem, and masculinity. Thus a job situation may often lend a man an identity without which life may be intolerable. Certainly as a psychiatrist I see more and more people

who come to see me in order to establish an identity rather than to be helped for a known psychopathological syndrone. "I wish to know who I am," has replaced only too often a former opening complaint, "I am nervous and sick."

Another aspect of the work situation is that it enables the average person to channel his aggressive impulses into a sublimated and acceptable constructive activity. Among the features characterizing living matter is an irritability that demands discharge of its energy through meaningful activity. Unless the energy is discharged through goal-directed action, such as work is, it may become undifferentiated, undirected, and therefore seemingly irrational. Added to this is the fact that biological matter, unless utilized, atrophies and dies. Seldom, if ever, has any job, performed within the physiological capacities of the organism, killed a man. On the contrary, work well done and within physiological capabilities, though it may fatigue, imparts a vigor to the body and often an exhilaration to the psyche.

Furthermore, work may supply man with a reason for existence. Since he is constantly in search for a meaning of life, being on a job, being thus useful to his family, community, and society, and being a productive member of a group may furnish an answer to that ever recurring question. Work also enhances an individual's erotic value. When he is young, a man's appearance alone may be sufficient to make him attractive and sought after. Once aging alters our facade, other meaningful factors must keep us attractive in the eyes of our fellow man. The fruit of labor and its contribution to the life of others can certainly more than balance the ravages of time, and add to the erotic value of the self.

Then there are those to whom work has the meaning of a social interchange. They can only relate themselves to others through their work; work becomes their medium of communication. When removed from its milieu, these people feel lost. For them, the removal from a job becomes isolation with all its attendant and dreaded consequences. A friend of mine said of his father-in-law, who died soon after retirement, "It seems as if his life ended when his job ended. He was a different person when he worked. He was able to relate himself to people and be adequate. Work was his job and his social life. His retirement was his undoing."

Work enables some people to avoid boredom and introspection. Too many of us have difficulty in facing ourselves and bearing our own company. Not infrequently we find ourselves in pursuit of a way to 'kill time'--as though if we fail to kill time, it will kill us. Time on one's hands is often a very threatening commodity. One must either 'kill' it or utilize it in a non-threatening fashion. A work situation obviously solves this problem most satisfactorily.

Finally, as far as attitudes toward work are concerned, it is often a source of intrinsic enjoyment, that is, enjoyment of the art itself. This would be particularly true of those who take pride in what they are doing whether it be the rendering of services, creating a product, or realizing of the self through one's labors.

Our culture, difficult though it is to define because of the diversity of peoples who have fashioned it and the plurality of cultural memories which wove visible threads through its fabric, nevertheless has some dominant motifs in its value orientation. One of these is the type of individual whom we value.

Americans, according to Florence Kluckholn[6], are noted for emphasis on the 'doing' individual as the valued person in our society. Our ideal person is concerned with action and achievement. Whereas the Mexican mother (as an example of Kluckholn's 'being' orientation) may happily enjoy her child from day to day, the American mother is too often concerned with its progress. She compares him with other children and in this way measures her own success as an efficient manager or as a force in the community. What the individual does and what he can accomplish are primary questions in our society. Getting things done and trying to do something about everything are stock American characteristics despite our cultural plurality. Each of us is comparing and competing to a degree; we can readily recognize the impact of such an orientation on the individual who has to give up competition in the field of work. If he is unable to compete, he is at an obvious disadvantage as far as our society is concerned. He therefore may have stopped doing, and so be beyond our pale.

I am aware that I have said he may stop 'doing.' And I must hastily add, <u>do</u> in our cultural sense. In our society, deeds, actions, and accomplishments must be visible to the naked eye of others, or if not to the eye, at least to another of the senses. Should we be reading and asked, "What are you about?" (or doing) we are prone to reply, "Oh, nothing. I'm just reading." Or just thinking. As if evaluating and reading is nothing. Even learning <u>per se</u> is considered as a time filler rather than an activity. As a result, persons in our society are impatient in the process of learning. They would rather produce mediocre, or, as I prefer to call it, 'instant art,' than spend the time necessary to reach for perfection. Here the psychiatrist, too, may fail the patient. Since the psychiatrist is a member of our society, a captive of its culture, he may apply the doing orientation to the people who are not doing. He may push toward activity and action when the 'being' activity would be a more appropriate orientation for all concerned. What is true of the psychiatrist is true of all of those concerned with the educational system.

What I have said about work is predicated on the continuance of the present cultural value orientation, i.e., the work-oriented society. Leisure, as a sought-after dream, is at present viewed only as a relief from hard work. The values inherent in leisure and its proper use are as yet ill defined in the mind of man, and therefore are still downgraded in our ethic.

For various and seemingly logical reasons, we have turned from educating ourselves to perfecting our skills; we are in grave danger of losing our soul while saving our skin. Man's inner wisdom, that which may be called divine within him, preceives the uses to which man places the machine, fears for the dehumanization of mankind, and looks with apprehension and ambivalence toward the era of automation.

To conclude, what I have attempted to do is to set down the unconscious human reaction to the threat of automation. I have spoken of the man's ambivalence towards its benefits, and the implied threat to personal identity, to an individual's sense of reality, and to the ability to master environment. I have talked also about some of man's feelings in relation to work.

In a pragmatic, doing society we need to find new methods of approach, to motivation (albeit oblique ones) in order to learn how to grasp the promise implicit within the growing leisure--a leisure which may be enriching because it is the opportunity to fulfill the potential of the human being.

* * * *

1. Roy R. Grinker. "Psychiatry Rides Madly in All Directions." Archives of General Psychiatry, X, No. 3. March 1964.

2. Hans Sachs. "The Delay of the Machine Age." Psychoanalytic Quarterly, II, No. 2. 1933. 404-424.

3. Samuel Butler. Erehwon. 1910. New American Library.

4. Genesis, III:19.

5. Jack Weinberg. "Motivations of the Aging Worker." Earning Opportunities for Older Workers, ed. Wilma Donahue. University of Michigan Press. 1955. pp. 83-88.

6. Florence Kluckholn. "American Family; Past and Present and America's Women" in "Patterns for Modern Living." Psychological Patterns, ed. O.H.Mowrer. Delphian Society. 1952. pp. 25-140.

APPENDIX

Further Readings

List I of this bibliography contains books and pamphlets dealing with the social effects of cybernation. The list was compiled by Robert Theobald who described it as a "very brief bibliography." While not intended to be either definitive or exhaustive, it will be useful in exploring further the impact of automation on American life. We have added one of our own publications, The Meanings of Work by Sidney J. Levy, an essay on a central issue in automation, and Automation and Technical Change, John T. Dunlop, ed., recommended as especially good on the subject.

References on the educational implications of automation, List II, are still few and scattered. We can present, therefore, only the very short preliminary listing below.

List I

On the Social Effects of Cybernation

(Circulated by Robert Theobald)

Articles:

Caught on the Horn of Plenty. W. H. Ferry. Box 4068, Santa Barbara, California. (Center for the Study of Democratic Institutions.)

> The earliest, and the best, brief statement on the realities of abundance in a cybernated era.

Jobs, Machines and People. Ralph Helstein, Gerard Piel, Robert Theobald. Box 4068, Santa Barbara, California.

> A conversation between a scientist, a labor leader, and an economist on the effects of cybernation and abundance.

Labor Looks at Labor. Box 4068, Santa Barbara, California.

> Labor examines its own record and finds it wanting.

The Triple Revolution. Ad Hoc Committee on the Triple Revolution, 1120 Connecticut Avenue, N.W., Washington 36, D.C.

A document, signed by some thirty individuals, stressing the fact that weaponry, cybernation, and human rights revolutions require much more extensive changes in policy.

Pamphlets:

Cybernation: The Silent Conquest. Donald N. Michael. Box 4068, Santa Barbara, California.

The word 'cybernation' was coined in this pamphlet which describes the immense sweep of the cybernated system.

The Economy Under Law. W. H. Perry. Box 4068, Santa Barbara, California.

An examination of how to bring the economic order under the control of the political order.

Books (paperback edition listed when available):

The Affluent Society. John K. Galbraith. New American Library.

The classic, if somewhat conservative, statement of the reality of abundance in America.

Automation and Technical Change. John T. Dunlop, ed. Prentice Hall.

A consideration of the effect of advancing industrial technology on human values. Special chapter on educational effects.

The Challenge of Abundance. Robert Theobald. New American Library.

The potential and threat of abundance, particulary its economic and social implications.

Challenge to Affluence. Gunnar Myrdal. Pantheon.

An extensive program for economic reform in the United States.

Education Automation. Buckminster Fuller. Southern Illinois University Press.

How to use technological change to improve education and benefit society.

Free Men and Free Markets. Robert Theobald. Clarkson N. Potter.

Specific proposals for new methods of distributing income in a cybernated age.

The Human Use of Human Beings. N. Wiener. Anchor

The possibilities for a human society by the 'father of cybernation.'

Manpower Report of the President. 1964 Edition. U.S. Government Printing Office.

Latest figures and the official position of the Department of Labor.

Meanings of Work. Sidney J. Levy. Center for the Study of Liberal Education for Adults.

Analyzes what work means in our society in contrast to leisure. Special reference to blue-collar workers, homemakers, and professional-managerial class.

Nation's Manpower Revolution Hearings. Subcommittee on Employment and Manpower. Committee on Labor and Public Welfare. U. S. Senate.

An exhaustive compendium of information on all aspects of the manpower revolution in the United States, together with comparisons with other countries.

The Other America. Michael Harrington. Penguin.

The popular statement of the continuance of extreme poverty in the midst of potential abundance.

The Price of Prosperity. Peter Bernstein. Doubleday.

An examination of the social implications of continued economic growth.

List II

On the Educational Implications of Cybernation

Automation and the Challenge to Education. Luther H. Evans and George E. Arnstein, eds. NEA, 1201 Sixteenth Street, Washington 36, D.C.

Proceedings of a symposium held in Washington, D.C., sponsored by the Project on the Educational Implications of Automation, National Education Association.

The Case for Balance. Thomas J. Watson. IBM, 590 Madison Avenue, New York City.

A speech given by the chairman of the board of IBM at the October, 1963, meeting of the American Council on Education.

Education for Full Employment. Virgil M. Rogers. NEA, 1201 Sixteenth Street, Washington 36, D.C.

A statement by the director of the Educational Implications of Automation project of the National Education Association.

Education for the World of Work. Virgil M. Rogers. NEA, 1201 Sixteenth Street, Washington 36, D.C.

A speech given by the director of the Educational Implications of Automation project of the National Education Association.

Of Leisure, Education, and the Older American. George E. Arnstein. Home Study Review.

No Room at the Bottom: Automation and the Reluctant Learner. Goodwin Watson, ed. NEA, 1201 Sixteenth Street, Washington 36, D.C.

Essays published by the Project on the Educational Implications of Automation, National Education Association.

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